

Assessment of Preferences for Self-Treatment and Information in Health Care

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It has been assumed that it is beneficial for patients to become active and informed participants in health care. Previous research, however, suggests that individuals differ in their receptiveness to information and self-care in treatment situations. This article reports the development and validation of the Krantz Health Opinion Survey, a measure of preferences for different treatment approaches. This measure yields a total score and two relatively independent subscales that measure, respectively, preferences for information and for behavioral involvement (i.e., self-care and active participation) in medical care. Three related studies demonstrated the ability of the subscales or total score to predict with some specificity (a) criterion group membership (clinic users and enrollees in a self-care course), (b) reported use of clinic facilities, and (c) overt behavior (e.g., inquisitiveness, self-diagnosis) in a medical setting. Discriminant validity of the instrument is also established. Theoretical implications of the preference constructs are described in terms of the concept of personal control, and practical implications of the measure are presented.

In recent years, there have been a number of calls for psychologists to become more involved in immediate problems of the practical world (e.g., Miller, 1969). It is particularly appropriate that social psychology, with its roots in action research (Lewin, 1948), apply its theories and methods to real-world problems. Increasing numbers of social and personality psychologists are therefore adopting a more problem-oriented approach to the understanding of human behavior. An important example of this trend is the application

of social-psychological principles to a variety of health care problems. The interest in this area has derived in part from a recognition that medical outcomes can be determined by the nature of the interaction between doctor and patient, the patient's understanding of illness, and his or her degree of participation in the health care process (cf. Korsch & Negrete, 1972; Krantz, 1980; Krantz & Schulz, 1980). At the same time, growing consumerism and a movement away from the traditional medical model have encouraged patients to become more active and informed participants in the health care process. Although it is generally assumed that more information and self-reliance are better (e.g., Vickery & Fries, 1976), questions still remain as to how much patients should be told (e.g., McIntosh, 1974) and how much self-care and responsibility are optimal (Linn & Lewis, 1979).

Further complicating this situation is the likelihood that some individuals may benefit more than others from being highly informed or involved in their own treatment. Personality-based expectancies and beliefs about

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health and illness may determine the efficacy of patient-oriented approaches to health care. Although some research has addressed these individual differences (e.g., Wallston, Wallston, Kaplan, & Maides, 1976), most studies have relied on clinical intuition or measures of coping styles devised for other purposes. The studies reported in this article develop a specific measure of individual differences in preferred role in health care procedures.

Personal Control and Health Care

Several social-psychological concepts are potentially relevant to these problems. In stress research, the effects of providing subjects with information and heightening participation and choice have been examined in terms of the concept of personal control (cf. Averill, 1973; Langer & Rodin, 1976). Heightened participation and choice often lead to increases in perceived control, since they may provide subjects with the belief (correct or not) that they can alter or affect outcomes. Since one of the aims of self-care programs is to increase peoples' general feelings of self-reliance and control over their bodies, the psychological effects of self-care might be viewed in terms of the concept of personal control. Information has also been conceptualized as a form of cognitive control, because it may increase the ability to prepare for aversive events and often also results in the interpretation of events so that threat is lessened (Averill, 1973; Seligman, 1975). The effects of providing information in medical settings may also be viewed in this conceptual framework (cf. Johnson, 1975).

Although control over a stressor frequently results in less negative effects on the organism, several studies suggest that there are not always *direct* beneficial effects of providing control (cf. Averill, 1973; Mills & Krantz, 1979). Instead, the context and meaning of a particular "control response" determines whether it will be effective in reducing stress. This principle is also supported by individual-difference research (e.g., Houston, 1972) indicating that individuals perform better in stressful situations where there is congruence between general expectations for control and the locus of control in that particular situ-

ation. Because the relationship between personal control and favorable outcomes is often complex, research has been conducted in medical settings to determine the effects of providing for patients' control over some aspects of treatment. (See Krantz, 1980, for fuller discussion of these issues.)

Accordingly, researchers have provided patients with information that allows them to prepare for medical procedures (e.g., Egbert, Battit, Welch, & Bartlett, 1964; Johnson & Leventhal, 1974) and have trained patients in coping strategies that facilitate processes involved in treatment and recovery (e.g., Kendall et al., 1979; Langer, Janis, & Wolfer, 1975). In these studies, providing information has generally reduced emotional reactivity and facilitated the recovery process, although these effects often involve complex mediating processes. Other research suggests that directly providing patients with actual or perceived control over outcomes is often (but not always) effective in facilitating treatment and recovery. Thus, there have been studies that made the patient a more active participant in treatment (Cromwell, Butterfield, Brayfield, & Curry, 1977), that heightened the patient's sense of choice (Mills & Krantz, 1979), or that provided for self-monitoring or self-care (e.g., Berg & LoGerfo, 1979; Mahoney & Thoreson, 1974).

Differences in Receptiveness to Information and Self-Care

There appear, however, to be substantial individual differences in reactions to these kinds of treatment interventions. Among patients given preparatory information, several studies (Andrew, 1970; Shipley, Butt, Horwitz, & Farbray, 1978) have found that individuals who tend to deny or repress anxiety-provoking stimuli respond more poorly than those who tend to be sensitized to stressful stimuli. Other studies using locus of control as an individual difference variable have found that internals (those who feel they can control reinforcement) show better adjustment when given specific information, whereas externals fare best with general information (Auerbach, Kendall, Cuttler, & Levitt, 1976). Further, Cromwell et al. (1977)

found that heart patients given treatments congruent with control beliefs showed the best outcomes on several rehabilitation outcome measures, and several studies using a health-specific locus of control measure (Lewis, Morisky, & Flynn, 1978; Wallston et al., 1976) found that subjects in treatment conditions congruent with control beliefs expressed more satisfaction and reported higher compliance with a medical regimen. In sum, these data provide some evidence to support the conclusion that individuals fare best when given treatments that are congruent with their expectations and with their usual coping styles. It should be noted, however, that there have been some studies in this area (e.g., Cromwell et al., 1977; Marston, 1970) that have not produced clear-cut or consistent results.

Patient Attitudes

Personality variables are only one of a complex of factors that may determine the optimum approach for particular individuals. Health beliefs together with attitudes toward physicians and health care might also make people more or less suitable for specific programs and treatments. Studies of illness behavior (cf. Becker & Maiman, 1975; Rosenstock & Kirscht, 1979) demonstrate that beliefs about the efficacy of medical care influence use and response to health services. It has also been shown that when patients' expectations are not met, the result may be lowered satisfaction and decreased compliance with medical advice (cf. Korsch & Negrete, 1972). Despite the increasing tendency to promote self-care, provide patients with information, and increase their responsibility for health maintenance, relatively little is known about the relationship between patient attitudes and the outcomes of these types of approaches.

Rationale

The importance of patient expectations for health care outcomes suggests the need for a measure of individual attitudes toward different treatment approaches. Previous research and anecdotal evidence (e.g., McIntosh, 1974;

Springarn, 1978) suggest that some patients would prefer more or less active participation, some want more or less information, some more or less direction from physicians, and so on. We reasoned that a valid measure of patient preferences would relate to treatment outcomes and therefore facilitate research on medical behavior. Such a measure of these preferences was recently developed (Krantz, Note 1). Since the two most common types of psychological interventions involve providing information and encouraging active involvement or self-care, this measure was constructed to yield scales for each of these components. The first study reported in this article provides data on the development of this instrument. The studies that follow provide validation for the scale, which was specifically designed to measure attitudes toward different treatment approaches.

Scale Development

Method

Pilot Work

An item pool of 40 statements about aspects of medical care was written to encompass the domain of preferences for an active and informed versus a relatively inactive and trusting role in the health care process. A number of these items were adapted from a questionnaire developed to measure physician attitudes toward self-care (Linn & Lewis, 1979). The set of face-valid items tapped (a) beliefs in the efficacy and benefits of self-care, (b) frequency of information-seeking and questioning of physicians and nurses, (c) beliefs about the benefits or disadvantages of making one's own medical decisions, (d) attitudes toward use of a physician versus oneself as a health-care provider, (e) frequency of self-diagnosis, and so on. A binary agree-disagree format was used, and items were keyed so that high scores represented favorable attitudes toward self-directed care.

The 40-item test was administered to 200 undergraduates, and a preliminary item analysis was conducted. Items were eliminated if they correlated less than .20 with the total score or showed a narrow distribution of response alternatives. From the original pool, 26 items remained. This second version of the test was then administered to 159 undergraduates. Factor analysis (principal components using varimax rotation) was used to obtain a rough idea of the components of the scale and to derive two meaningful subscales as planned. The first scale, called *Behavioral Involvement* (B), consists of nine items concerned with attitudes toward self-treatment and active behavioral involvement of patients

Table 1
Items and Statistics for the Krantz Health Opinion Survey

Item	Corrected item correlations	
	Total score	Assigned subscale
Information subscale		
I usually don't ask the doctor or nurse many questions about what they're doing during a medical exam. (1) ^a	.46	.59
I'd rather have doctors and nurses make the decisions about what's best than for them to give me a whole lot of choices. (3) ^a	.36	.36
Instead of waiting for them to tell me, I usually ask the doctor or nurse immediately after an exam about my health. (4)	.30	.48
I usually ask the doctor or nurse lots of questions about the procedures during a medical exam. (8)	.47	.59
It is better to trust the doctor or nurse in charge of a medical procedure than to question what they are doing. (10) ^a	.35	.36
I usually wait for the doctor or nurse to tell me the results of a medical exam rather than asking them immediately. (15) ^a	.35	.58
I'd rather be given many choices about what's best for my health than to have the doctor make the decisions for me. (16)	.35	.37
Behavioral Involvement subscale		
Except for serious illness, it's generally better to take care of your <i>own</i> health than to seek professional help. (2)	.16	.24
It is better to rely on the judgements of doctors (who are the experts) than to rely on "common sense" in taking care of your own body. (5) ^a	.44	.49
Clinics and hospitals are good places to go for help since <i>it's best for medical experts to take responsibility</i> for health care. (6) ^a	.36	.36
Learning how to cure some of your own illness without contacting a physician is a good idea. (7)	.23	.32
It's almost always better to seek professional help than to try to treat yourself. (9) ^a	.42	.50
Learning how to cure some of your illness without contacting a physician may create more harm than good. (11) ^a	.38	.45
Recovery is usually quicker under the care of a doctor or nurse than when patients take care of <i>themselves</i> . (12) ^a	.42	.49
If it costs the same, I'd rather have a doctor or nurse give me treatments than to do the same treatments myself. (13) ^a	.45	.43
It is better to rely less on physicians and more on your own common sense when it comes to caring for your body. (14)	.39	.36

Note. Correlations are point-biserial item-remainder correlations based on 200 cases. These correlations are all positive because scoring is reversed for negatively worded items, which are denoted by superscript a's. Numbers in parentheses indicate the sequence of items on the scale. Verbatim instructions may be obtained from the first author.

^a Negatively worded item.

in medical care. The second scale, called *Information* (I), is defined by seven items measuring the desire to ask questions and wanting to be informed about medical decisions. Remaining items not correlating with either of these scales were eliminated. The final version of the test, called the Krantz Health Opinion Survey (HOS), therefore consists of 16 items, each rated in a binary, agree-disagree format. The test yields scores for two a priori subscales and a total score measuring composite attitudes toward treatment approaches. High scores represent favor-

able attitudes toward self-directed or informed treatment. It should be noted that these items generally refer to routine aspects of medical care and do not refer to severe or traumatic illness. In addition, future refinement of the scale may require elimination of some redundancy in the wording of the items.

To determine discriminant validity, the test was then administered to 100 male and 100 female undergraduates at the University of Southern California together with the Crowne-Marlowe Social

Desirability Scale (Crowne & Marlowe, 1964) and the Health Locus of Control Scale (Wallston et al., 1976). An independent sample of 38 undergraduates completed the HOS along with the Minnesota Multiphasic Personality Inventory (MMPI) Hypochondriasis scale, and a third sample ($n = 87$) was given the HOS together with the Ullman (1962) version of the Repression-Sensitization (R-S) scale. Another sample of 80 students were given the HOS twice over a 7-week period to determine test-retest reliability.

Results and Discussion

Table 1 presents the items grouped by subscales. The total HOS scale has a Kuder-Richardson 20 reliability of .77. Reliabilities of the Behavioral Involvement (B) and Information (I) subscales were .74 and .76, respectively. Kuder-Richardson 20 reliability of the HOS for two subsequent college samples remained over .74 for subscales and the total scale. Test-retest reliabilities for the HOS components were .74, .71, and .59 for the total score, Behavioral Involvement scale, and Information scales, respectively, over a 7-week period. There was a slight but non-significant tendency for females to score somewhat higher than males on all HOS scales.

Correlations With Other Scales

Correlations among the HOS total score, its subscales, and four relevant individual difference measures are presented in Table 2. The two subscales of the HOS correlated only slightly with one another, sharing less than 9% of the variance. The HOS showed only a moderate correlation (.31) with the Wallston Health Locus of Control (HLC) Scale, a more established questionnaire that was designed to measure expectancies about the ability to control one's health.¹ Associations with the HLC were even lower for individual subscales, indicating that the HOS and HLC are probably measuring relatively independent processes. (Further discriminant validity will be demonstrated in later studies in this article.) The HOS also is very modestly correlated with repression-sensitization. Finally, the HOS and subscales show low or near-zero correlations with social desirability and hypochondriasis.

Validation Studies

Overview

The remainder of the research presented in this article is concerned with establishing the predictive, construct, and discriminant validities of the Krantz Health Opinion Survey. To accomplish this, the scale was administered to three samples: unselected residents of a college dormitory, students reporting to a college infirmary for routine treatment of minor illnesses, and students enrolled in a medical self-help course at the same school. For clarity of presentation, data are organized in the form of three studies. The first study reports scores of criterion groups, the second deals with reported use of infirmary services for minor illnesses, and the third examines overt behavior while undergoing treatment at the clinic.

Study 1: Scores of Criterion Groups

Method

One means of establishing the validity of an instrument is by predicting how predetermined groups of individuals will score on the instrument. Accordingly, the Health Opinion Survey was administered to criterion groups chosen to represent extremes in preferences for different approaches. These scores were then compared to other unselected samples from the same population.

The HOS was administered to 149 students at Trinity College in Hartford, Connecticut. This sample consisted of 56 freshmen dormitory residents, 12 students enrolled in a medical self-help course offered by the physical education department, and 81 students reporting on weeknights to a college medical office for routine health care. The self-help course covered topics such as basic first aid, cardiopulmonary resuscitation, and so on. We reasoned that a criterion group of students who voluntarily enrolled for such a course would be likely to have greater interest in self-care and in obtaining information about medical settings. It was therefore predicted that the self-help course enrollees would score higher on the behavioral involvement, information, and total scores of the HOS.

Research on illness behavior (e.g., Mechanic, 1968) suggests that use of medical facilities involves the perception and evaluation of symptoms as well

¹ In a second sample of 83 subjects (noted by parentheses in Table 2), correlations between the Health Locus of Control scale and all HOS scales were even lower.

Table 2
Correlations Among Krantz Health Opinion Survey (HOS) Scales and Four Individual Difference Measures

Scale	Total HOS	B	I
Behavioral Involvement (B)	.82**	—	—
Information (I)	.77**	.26	—
Crowne-Marlowe Social Desirability	-.03	.08	-.14*
Wallston Health Locus of Control	.31** (.11)	.26** (.16)	.23** (.00)
MMPI Hypochondriasis	-.13	-.17	-.02
Repression-Sensitization (R-S)	-.19	-.05	-.24*

Note. Correlations are based on 200 cases except those involving the Hypochondriasis ($n = 38$) and R-S ($n = 87$) scales. Values in parentheses are based on a second sample of 83 cases. Significance level differences for coefficients of similar magnitude result from differing sample sizes.

* $p < .05$. ** $p < .01$.

as the decision to act on them. Therefore, individuals who seek help represent only a subset of those who may be ill. The behavioral involvement scale presumably measures preferences for self-care, and low self-care individuals should perhaps be more inclined to seek professional help for relatively minor illness. Conversely, high self-care individuals should be more likely to first treat themselves when they perceive minor illness. The sample of college infirmary users might therefore serve as a second criterion group. The medical office is free to students and is staffed in the evenings by a nurse. Virtually all the users of this clinic report with minor illnesses such as colds, headaches, flu, and so on. It was expected that clinic users would tend to score lower than unselected dorm residents on the Behavioral Involvement scale (but not necessarily the other scales) of the HOS.

Results²

One-way analyses of variance followed by Dunnett's t tests were conducted to compare scores of the self-help and clinic samples with those of the dorm residents (see Table 3). As expected, the self-help group scored higher than the dorm group on preference for behavioral involvement, $t(146) = 2.36$, $p < .05$; total HOS score, $t(146) = 2.69$, $p < .05$; and was marginally different on information, $t(146) = 1.76$, $p < .10$. The clinic users were in turn lower than dorm residents on the B

scale, $t(146) = 1.98$, $p < .05$, but did not differ on either the I scale or total score. As predicted, the HOS successfully discriminated between a criterion group of high self-care subjects and the general student population, and low B scores were associated with use of clinic facilities.

Study 2: Reported use of Clinic Facilities and Discriminant Validity

Method

Comparison of dormitory residents with clinic users indicated that attitudes toward involvement in health care affect the use of health care facilities. Consistent with this finding, one might expect individuals who do not prefer self-care (those with low B scale scores) to be more likely to use clinic facilities when they feel ill. Conversely, those with favorable attitudes toward self-involvement should be (at least initially) inclined to treat themselves when symptoms appear and therefore less likely to use the clinic.

To further investigate this aspect of the construct validity of the behavioral involvement scale, 54 students from the dormitory resident sample completing the HOS in Study 1 were asked to retrospectively report the number of times they had visited the college medical office during that academic year. To provide more evidence of discriminant validity of the HOS, the Wallston Health Locus of Control (HLC) scale (Wallston et al., 1976) was also administered to 38 students from this group. The HLC scale might also be expected to relate to use of clinic services, although competing predictions can be made about the direction of relationship. On the one hand, HLC internals (those who feel they are able to control their health) might be more self-reliant and less likely to make use of the clinic. On the other hand, if clinic use is seen as a means of exercising control over health, HLC internals may be more likely to use the infirmary.

Results and Discussion

The number of reported clinic visits during the year ranged from 0 to 20 for the 54 subjects. As predicted, there was a significant negative correlation between reported visits and Behavioral Involvement scores, $r = -.35$, $p < .01$. To determine if high B scores were related to increased clinic use in a linear

² One-tailed probability levels were adopted for this study, since directional predictions were specifically made.

Table 3
Normative Health Opinion Survey (HOS) Scores for Several Groups

Sample	n	Scale					
		Behavioral involvement		Information		Total HOS	
		M	SD	M	SD	M	SD
College dormitory residents	56	3.79	2.28	4.05	2.20	7.84	3.25
Users of college infirmary	81	3.00	2.25	4.31	2.13	7.31	3.45
College students in medical self-help class	12	5.50	2.58	5.25	1.82	10.75	3.79

fashion,³ the scale was broken into three approximately equal groups based on the distribution of B scores in this sample (see Figure 1). Trend analysis revealed a significant linear association between extremity of B scores and reported visits to the clinic, with clinic visits decreasing as B scores increased, $F(1, 51) = 7.70, p < .01$.

Scores on the I scale were not related to number of visits, $r = .06, p < .66$. This null finding indicates a degree of discriminative validity between the B and I scales. However, total scale scores were, like the B scale, related to clinic visits, $r = -.28, p < .04$, and trichotomizing the sample based on total HOS scores revealed that this was also a linear relationship, $F(1, 51) = 5.32, p < .03$.

Scores on the HLC⁴ were also negatively correlated with clinic visits, $r = -.32, p < .05$, but a trend analysis dividing the sample into high, medium, and low HLC groups revealed that this relationship was not significant, $F(1, 35) = 1.81, p < .19$. Examination of Figure 1 reveals that although none of the three HLC groups differed significantly from one another, only the highly internal subjects reported less use of health services than the others.⁵

In sum, the B scale and total score on the HOS show a linear negative relationship to reported use of clinic facilities. This result, in conjunction with the B score difference between clinic and dorm samples in Study 1, supports a link between preferences for behavioral involvement (or self-care) and use of clinic facilities. The B and I scales seem to show some discriminant validity, and the effects of the B scale and Health Locus of

Control scale appear to be largely independent of one another.

Study 3: Treatment Preferences and Behavior in a Clinic

Preferences for information or self-treatment in medical settings should reflect themselves in overt behavior exhibited while individuals are undergoing treatment. Patients who indicate higher preferences for information should, in fact, ask more questions in such a setting or seek out information when given an opportunity to do so. Similarly, individuals who prefer behavioral involvement (as opposed to passivity) when undergoing treatment should play a more active role in the treatment process. This may be reflected

³ Since the scale will probably be used as a technique for classifying subjects based on extremity of scores, we present these analyses based on discrete groups even though the scale is a continuous measure.

⁴ In this article, the HLC was scored in the internal direction. High scores therefore indicate perceived ability to control one's health.

⁵ Even though the HLC and HOS share less than 10% of variance, the possibility arises that the B scale is related to reports of clinic visits by virtue of its association with HLC. Therefore, partial correlation coefficients were calculated between the respective scales and number of visits to the infirmary, partialing out the effect of the other scale. These analyses, based on 38 available cases, revealed that both behavioral involvement ($r = -.27$) and HLC ($r = -.30$) were correlated with visits in a relatively independent manner. Although the correlations were not reduced substantially in magnitude, they did not achieve reliable levels of significance due to smaller sample size.

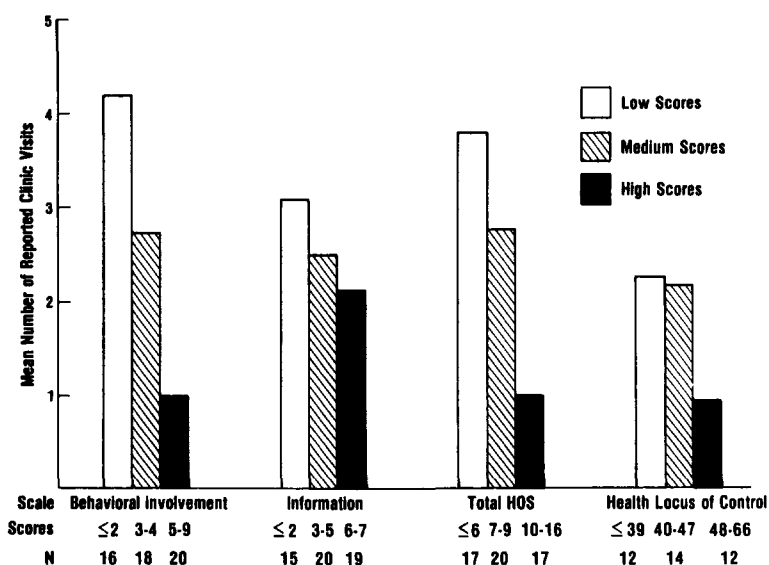


Figure 1. Relationship of reported clinic visits to high, medium, and low scores on Krantz Health Opinion Survey component and total scales and Health Locus of Control scale.

in attempts to self-diagnose or become involved in treatment when given the opportunity to do so.

These aspects of the construct validity of the Health Opinion Survey and subscales were investigated in a study of users of student medical facilities. A clinic nurse rated a variety of patient behaviors exhibited during a medical exam. These behaviors related to information seeking (e.g., asking questions) and active involvement in treatment (e.g., self-diagnosis). Latency between appearance of symptoms and seeking medical help was also recorded, and some patients who needed medications were offered the option of choosing these medications if they desired. It was predicted that the B and I scale scores would show specificity in relating to the clinic measures. That is, I scores should relate only to information-seeking behaviors and B scores to measures of active involvement. Total HOS scores should be predictive of behaviors that encompass a combination of both dimensions, such as asking for specific medications.

Method

Subjects

Subjects were the 81 undergraduates (45 males, 36 females) at Trinity College who visited the col-

lege medical office with minor complaints such as headache, colds, flu, and so on. Because of procedural problems and the ongoing nature of the study, all subjects did not receive all dependent measures.

Procedure

As patients entered the waiting room of the medical office, they were approached by a female experimenter and asked to participate in a study of "attitudes toward health care." Virtually all patients agreed to participate. After informed consent was obtained and anonymity assured, subjects were escorted into the examination room, where a nurse (who was blind to the purpose of the experiment and subjects' HOS scores) conducted a medical examination or gave treatment as required. During the course of the exam, the nurse closely observed and questioned the patients' behavior so that a post-exam questionnaire could be completed. The nurse determined how long the patient had waited between the appearance of the symptoms and reporting to the clinic, whether the patient had made an attempt to self-diagnose, and the number of questions asked by the patient. The nurse conducted the exam in a way that would not inhibit any act of inquisitiveness or behavioral involvement of patients. For a subset of the sample ($n = 29$), if medication was required the nurse explicitly offered the patient a choice: He or she could either choose for him or herself from among several available medications or have the nurse choose one.

When the exam was concluded, the patient was escorted into the waiting room where the Health

Opinion Survey and a postexamination questionnaire were completed. A subset of patients also completed the Health Locus of Control scale. During this time the nurse completed the questionnaire assessing her perceptions of the patient's behavior.

Dependent Measures

Nurse ratings. For 62 of the subjects, the nurse recorded the number of questions asked by patients during the exam, whether patients had attempted to self-diagnose, and if the patients had requested a specific medication. For the remainder of the subjects, these measures were not recorded. Latency (in days) to report to clinic after appearance of symptoms was coded on a 9-point scale, where 0 = same day and 8 = greater than 1 week. For those patients given the option to choose medications, the subject's decision (nurse or self) was recorded. In addition, the nurse was asked to evaluate the patient on a number of dimensions (discom-

fort during the exam, receptiveness to treatment, eye contact, degree of detail in describing symptoms).

Patient questionnaire. Following the exam, patients were asked questions regarding such things as their satisfaction with treatment and quality of care, degree of discomfort, and familiarity with the infirmary.

Results and Discussion

Number of Questions Asked

Nurse ratings of the number of questions asked by the patient during the exam revealed that higher I scores were associated with greater inquisitiveness, $n = 62$, $r = .28$, $p < .03$. The B scale was not reliably related to questions asked, $r = .16$, $p < .22$, but total scores on the HOS were related to inquisitive-

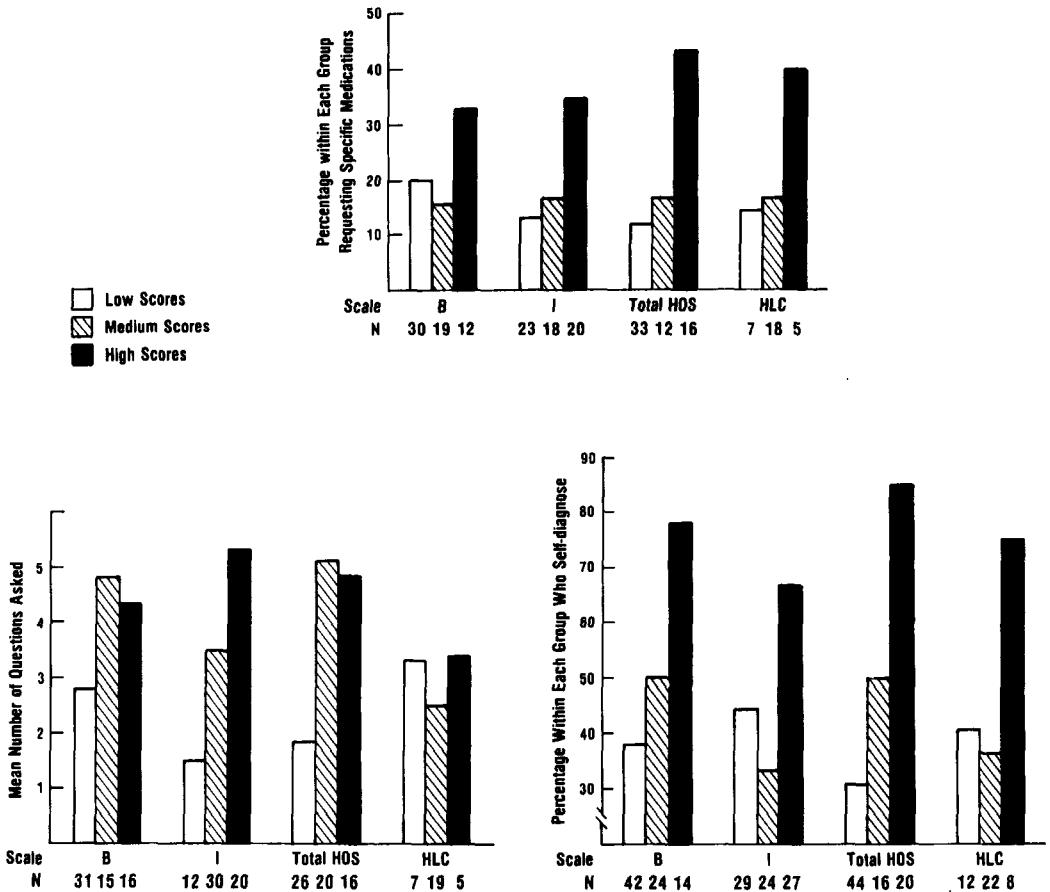


Figure 2. Relationship of clinic variables from Study 3 to high, medium, and low scores on Krantz Health Opinion Survey (HOS) Behavioral Involvement (B), Information (I), and total scales, and Health Locus of Control (HLC) scale.

ness, $r = .30$, $p < .02$. To further examine the nature of these relationships, scores on each scale (I, B, and total) were divided into thirds based on the population distribution of the unselected dormitory sample reported in Studies 1 and 2.⁶ Trend analyses revealed a positive linear relationship between number of questions and I scores, $F(1, 59) = 9.56$, $p < .01$ (see Figure 2). The high, medium, and low information subjects asked an average of 5.3, 3.4, and 1.3 questions, respectively. A similar linear relationship was obtained for total scores, $F(1, 59) = 8.41$, $p < .01$, but there was no reliable relationship between extremity of B scores and questions asked, $F = 2.02$, $p < .15$.

Self-Diagnosis

It was expected that the Behavioral Involvement, but not the Information, subscale would be related to whether the patient had attempted to self-diagnose. Chi-square analyses were used to determine the relationship between self-diagnosis (coded yes/no) and extremity of scores on the respective scales. Figure 2 presents these data. Once again, each scale was trichotomized based on the dormitory sample norms. A 3×2 chi-square analysis revealed a significant association between B scores and self-diagnosis, $\chi^2(2) = 6.91$, $p < .04$. It can be seen that the higher the reported preferences for behavioral involvement, the greater the likelihood of subjects spontaneously offering diagnoses. Similar chi-square analyses revealed that total scores were also positively related to self-diagnosis, $p < .01$. Unexpectedly, the information scale was related to self-diagnosis, $p < .06$; however, this relationship was not a positive linear one (see Figure 2).

Requesting Specific Medications

The nurse recorded whether patients requested specific medications during the exam. Three by two chi-square tests revealed that requests were reliably related only to total scores, $\chi^2(2) = 6.62$, $p < .04$ (see Figure 2). Neither behavioral involvement nor information scores related to medication requests in this analysis. A case could be made that ask-

ing for medications should relate to either information or behavioral involvement. In retrospect, however, requesting medications involves elements of both inquisitiveness and behavioral involvement. Therefore it is not surprising that it is most strongly related to the total score, the aggregate of these elements.

Electing to Choose Medications

Twenty-nine patients were explicitly given the opportunity to either select their own medication or have the nurse choose for them. The smaller number of subjects with available data necessitated that HOS scores be dichotomized (based on the dorm median) rather than broken into thirds. Chi-square analysis (Nurse/Self-Choice \times High/Low HOS Scores) revealed that only 7% of subjects with lower B scores (0, 1, and 2) chose their own medications, whereas 50% of high Behavioral Involvement subjects (scores ≥ 3) elected to choose, $\chi^2(1) = 4.81$, $p < .03$. Total scores, $p < .03$, but not information scores, $p < .40$, were also related to choice.

Reported Latency to Come to Clinic

Neither B scores nor total scores were significantly correlated with latency to report to clinic, $n = 80$, $r_s = .10$ and $-.10$, respectively. Unexpectedly, I scores were negatively correlated with latency, $r = -.28$, $p < .02$. Closer examination of the data revealed that there was a curvilinear relationship between extremity of Behavioral Involvement scores and latency to report to the clinic (quadratic trend, $p < .06$). Subjects in the lowest third of the distribution reported to the clinic most quickly after symptoms appeared ($M = 1.7$ days), those with moderate B scores waited the longest ($M = 3.3$ days), and those with high B scores fell between those extremes ($M = 2.3$ days). These data seem to suggest

⁶ The dormitory student sample was used as the population to determine criteria for low, medium, and high scores, since there was some evidence (reported earlier) that clinic users may be a selected group. Figure 1 presents these cutpoint scores. Use of clinic group to determine normative cutpoints would not substantially change these results.

that very strong preferences for behavioral involvement do not reflect themselves in the amount of time taken to seek medical help. However, in view of the relationships between B scores and clinic use obtained in the previous studies, it seems plausible to consider another explanation for this effect. After reporting to a medical setting, high self-care individuals may have distorted reports of delay out of reluctance to admit that they had waited so long. Neither I nor total scores showed a linear or curvilinear relationship to latency.

Wallston HLC Scale

The HLC scale correlated $-.28$ with number of questions asked, $n = 31$, $p < .13$, indicating a trend for health internals to ask fewer questions than health externals. This relationship is opposite to that obtained for the HOS Information subscale. The negative correlation between HLC and inquisitiveness is not consistent with one previous finding (Wallston et al., 1976). However, examination of Figure 2 reveals that the fewest questions were asked by individuals with moderate HLC scores.

Chi-square tests indicated that Health Locus of Control scores were not reliably related to self-diagnosis ($p < .55$) or to requesting medications ($p < .47$). Thus, there is evidence of substantial discriminant validity between HLC and HOS. However, HLC showed a curvilinear relationship to latency to report to the clinic (quadratic trend, $p < .06$), although the correlation between HLC and latency was not significant, $n = 42$, $r = .15$, $p < .34$. This finding resembles results obtained for the B scale.

Patient Self-Ratings

Following the visit with the nurse, patients were asked to rate their degree of satisfaction with treatment, their discomfort during the exam, and their degree of familiarity with the infirmary. The only reliable relationship was a positive correlation between rated satisfaction and behavioral involvement, $n = 62$, $r = .27$, $p < .04$. This correlation was not surprising, since the nurse's behavior during

the exam was designed to facilitate the behavioral involvement of patients.

General Discussion

The present studies demonstrate that attitudes toward treatment approaches can be measured reliably and that these preferences influence a variety of health and illness behaviors in a fairly straightforward way. Two separable components of these attitudes were described: behavioral involvement, concerned with attitudes toward self-care and an active role in medical care, and information, concerned with desire to ask questions and to be informed of and involved in medical decisions. These two components, which are relatively independent of one another, display a degree of specificity in their ability to predict behavior. In addition, the Krantz Health Opinion Survey does not appear to overlap considerably with previously existing scales and measures.

From a conceptual point of view, the Behavioral Involvement and Information subscales of the HOS bear some resemblance to categories of personal control described by Averill (1973) in a review of stress research. He distinguished three types of control: behavioral, encompassing direct action on the environment; cognitive, the interpretation of events, including information; and decisional, having a choice among alternative courses of action. Since the two HOS subscales appear to be relatively independent of one another, this suggests that at least in terms of health care, the preferred types of personal control do not covary to a high degree. In addition, according to Averill (1973), the relationship of personal control to stress is a function of the meaning of the control response to the individual; the meaning and effectiveness of a particular intervention are often determined by the situational context. Several studies conducted in health care settings (e.g., Cromwell et al., 1977; Mills & Krantz, 1979) support the view that the effects of interventions involving information and behavioral involvement also depend on the way they are presented and whether they enable individuals to satisfy their needs in that setting (cf. Krantz, 1980).

Preferences for or against behavioral involvement and information may therefore be an index of how the individual interprets those approaches that encourage patient involvement, self-care, and informed participation. The existence of these individual differences also suggests that "the more control the better" may not be an effective principle for everyone in medical care. We are presently conducting research to determine if medical outcomes are most favorable when patient preferences are matched to particular treatment approaches. In addition, Linn and Lewis (1979) have developed a measure of physicians' attitudes toward self-care. It may also be productive to match patient preferences to physicians with corresponding attitudes.

It is worth noting that for several variables (e.g., self-diagnosis, reported clinic visits), the HLC and Behavioral Involvement scales seem to predict about equally well for individuals scoring in the upper third of the distribution on each scale. However, of these two measures, only the Behavioral Involvement scale is able to predict criterion behaviors across the entire range of scores (see Figures 1 and 2), and is not confined in usefulness to the upper ranges of the distribution. Moreover, the HOS also yields a second information scale that allows measurement of inquisitiveness in a medical setting. It should be noted that the HOS total score is probably only applicable to behaviors representing a composite of behavioral involvement and information seeking.

The constructs identified by the Krantz Health Opinion Survey may have several additional implications for both researchers and practitioners. At present the value of the component scales has been demonstrated for predicting behaviors relating to routine medical care for relatively short-term, minor illness. It still remains for future research to determine whether the Health Opinion Survey is applicable to instances of chronic or serious illness. The present studies also highlight the importance of beliefs about health care in determining use of clinic facilities and other health-related behaviors. Researchers concerned with illness behavior and symptom perception (e.g., Mechanic, 1968; Rosenstock & Kirscht, 1979) have sought to identify factors

that lead individuals to seek or avoid medical help. The present studies suggest that individuals who prefer an active role in health care may be less likely to seek out the help of a physician for minor illness.

At this time, we cannot specify the exact antecedents of preferences for particular treatment approaches. Most probably a complex of processes including cultural and demographic factors, education, and past experience with illness and with medical professionals all exert a degree of influence in shaping the beliefs measured by the HOS. Personality-based expectancies may play a role, although data from the present studies suggest little overlap between a variety of relevant personality measures and treatment preferences. To the extent that preferences are malleable, it may be possible to alter patient beliefs to foster increased self-reliance and decreased dependence on medical professionals. In addition, if there are strong associations between demographic characteristics and health-care preferences, this may have implications for developing modes of treatment for particular population groups. Finally, we do not as yet know the relationships between preferences and more general health beliefs (cf. Kirscht & Rosenstock, 1979; Rosenstock & Kirscht, 1979), which have been shown to influence use of health services and compliance with medical recommendations.

As presented here, the Krantz Health Opinion Survey is an experimental scale that requires further testing before its full validity and predictive potential can be assessed. Further research may suggest that a modified version is a useful measure for matching patients with particular practitioners or treatments, or for determining suitable candidates for types of health-promotion activities. Nevertheless, many unanswered questions remain regarding patients' receptiveness to programs that promote informed participation and self-care. Hopefully, these questions, together with the validated instrument presented in this article, will provide a stimulus for future research. The present studies also supplement a growing body of research dealing with the interface between social psychology and medicine, and demonstrate the

potential utility of a problem-oriented application of social-psychological principles.

Reference Note

1. Krantz, D. S. *The Krantz Health Opinion Survey: A Scale for the prediction of health care preferences*. Unpublished manuscript, University of Southern California, 1978.

References

- Andrew, J. M. Recovery from surgery, with and without preparatory instruction, for three coping styles. *Journal of Personality and Social Psychology*, 1970, 15, 223-226.
- Auerbach, S. M., Kendall, P. C., Cuttler, H. F., & Levitt, N. R. Anxiety, locus of control, type of preparatory information, and adjustment to dental surgery. *Journal of Consulting and Clinical Psychology*, 1976, 44, 809-818.
- Averill, J. R. Personal control over aversive stimuli and its relationship to stress. *Psychological Bulletin*, 1973, 80, 286-303.
- Becker, M. H., & Maiman, L. A. Sociobehavioral determinants of compliance with health and medical care recommendations. *Medical Care*, 1975, 8, 10-24.
- Berg, A. O., & LoGerfo, J. P. Potential effect of self-care algorithms on the number of physician visits. *New England Journal of Medicine*, 1979, 300, 535-537.
- Cromwell, R. L., Butterfield, E. C., Brayfield, F. M., & Curry, J. J. *Acute myocardial infarction: Reaction and recovery*. St. Louis, Mo.: Mosby, 1977.
- Crowne, D. P., & Marlowe, D. *The approval motive*. New York: Wiley, 1964.
- Egbert, L. D., Battit, G. E., Welch, L. E., & Bartlett, M. K. Reduction of post-operative pain by encouragement and instruction of patients. *New England Journal of Medicine*, 1964, 270, 825-827.
- Houston, B. K. Control over stress, locus of control, and response to stress. *Journal of Personality and Social Psychology*, 1972, 21, 249-255.
- Johnson, J. E. Stress reduction through sensation information. In I. C. Sarason & C. D. Spielberger (Eds.), *Stress and anxiety* (Vol. 2). New York: Wiley, 1975.
- Johnson, J. E., & Leventhal, H. Effects of accurate expectations and behavioral instructions on reactions during a noxious medical examination. *Journal of Personality and Social Psychology*, 1974, 29, 710-718.
- Kendall, P. C., et al. Cognitive-behavioral and patient education interventions in cardiac catheterization procedures: The Palo Alto medical psychology project. *Journal of Consulting and Clinical Psychology*, 1979, 47, 49-58.
- Kirscht, J. P., & Rosenstock, I. M. Patients' problems in following recommendations of health experts. In G. C. Stone, F. Cohen, & N. E. Adler (Eds.), *Health psychology: A handbook*. San Francisco: Jossey-Bass, 1979.
- Korsch, B., & Negrete, V. Doctor-patient communication. *Scientific American*, 1972, 227(2), 66-78.
- Krantz, D. S. Cognitive processes and recovery from heart attack: A review and theoretical analysis. *Journal of Human Stress*, 1980, 6(3), 27-38.
- Krantz, D. S., & Schulz, R. A model of life crisis, control, and health outcomes: Cardiac rehabilitation and relocation of the elderly. In A. Baum & J. E. Singer (Eds.), *Advances in environmental psychology* (Vol. 2), Hillsdale, N.J.: Erlbaum, 1980.
- Langer, E. J., Janis, I., & Wolfer, J. Reduction of psychological stress in surgical patients. *Journal of Experimental Social Psychology*, 1975, 11, 155-165.
- Langer, E., & Rodin, J. The effects of choice and enhanced personal responsibility for the aged: A field experiment in an institutional setting. *Journal of Personality and Social Psychology*, 1976, 34, 191-198.
- Lewin, K. *Resolving social conflicts*. New York: Harper, 1948.
- Lewis, F. M., Morisky, D. E., & Flynn, B. S. A test of the construct validity of health locus of control: Effects on self-reported compliance for hypertensive patients. *Health Education Monographs*, 1978, 6, 138-148.
- Linn, L. S., & Lewis, C. E. Attitudes toward self-care among practicing physicians. *Medical Care*, 1979, 17, 183-190.
- Mahoney, M. J., & Thoreson, C. E. (Eds.), *Self-control: Power to the person*. Monterey, Calif.: Brooks/Cole, 1974.
- Marston, M. V. Compliance with medical regimens: A review of the literature. *Nursing Research*, 1970, 19, 312-323.
- McIntosh, J. Processes of communication, information seeking and control associated with cancer: A selected review of the literature. *Social Science and Medicine*, 1974, 8, 167-187.
- Mechanic, D. *Medical sociology: A selective view*. New York: Free Press, 1968.
- Miller, G. P. Psychology as a means of promoting human welfare. *American Psychologist*, 1969, 24, 1063-1075.
- Mills, R. T., & Krantz, D. S. Information, choice, and reactions to stress: A field experiment in a blood bank with laboratory analogue. *Journal of Personality and Social Psychology*, 1979, 37, 608-620.
- Rosenstock, I. M., & Kirscht, J. P. Why people seek health care. In G. L. Stone, F. Cohen, & N. E. Adler (Eds.), *Health psychology—A handbook*. San Francisco: Jossey-Bass, 1979.
- Seligman, M. E. P. *Helplessness*. San Francisco: Freeman, 1975.
- Shipley, R. H., Butt, J. H., Horwitz, B., & Farbray, J. E. Preparation for a stressful medical procedure: Effect of amount of stimulus preexposure and coping style. *Journal of Consulting and Clinical Psychology*, 1978, 46, 499-507.

- Springarn, N. D. Doctors who tell all: They should understand that sometimes patients would prefer not to know. *The Washington Post*, July 30, 1978.
- Ullman, L. P. An empirically derived MMPI scale which measures facilitation-inhibition of threatening stimuli. *Journal of Clinical Psychology*, 1962, 18, 127-132.
- Vickery, D. M., & Fries, J. F. *Take care of yourself: A consumer's guide to medical care*. Reading, Mass.: Addison-Wesley, 1976.
- Wallston, B. S., Wallston, K. A., Kaplan, G. D., & Maides, S. A. Development and validation of the Health Locus of Control (HLC) scale. *Journal of Consulting and Clinical Psychology*, 1976, 44, 580-585.

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